



Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force



Success Story

MICROLASER HELMET-MOUNTED DISPLAY PROVIDES COLOR SYMBOLOGY



A recently developed color helmet-mounted display (HMD) produces images bright enough for aircrew members to see them clearly during daytime flight. The ability to present color symbology on HMDs enhances information transmission to pilots.

The microlaser HMD will mitigate risk in the Multi-Spectral Helmet-Mounted Display 6.3 program if its color, active-matrix, organic light-emitting diode display is unavailable or cannot meet daytime luminance requirements. Further, the microlaser system can illuminate other, non-HMD cockpit liquid crystal displays (LCDs).



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Accomplishment

A Small Business Innovation Research (SBIR) collaboration between the Human Effectiveness Directorate's Visual Display Systems Branch and several contractors, developed a breadboard LCD HMD lit by a compact microlaser system. This color HMD is the first in the world that produces images bright enough for pilots to see clearly during daytime flight and provides a new option for programs like the Joint Strike Fighter, which currently calls for replacing the heads-up display with an HMD.

Background

The microlaser HMD is rooted in the technological expertise of scientists and engineers (S&Es) within the directorate's Visual Display Systems Branch. During the Phase I SBIR, the S&Es and contractors demonstrated the feasibility and advantages of using solid-state microlasers to illuminate LCD-based HMDs. During Phase II, the team produced and integrated the microlaser system, fiber-optic input and output assemblies, compatible HMD optics, and an LCD, and then tested the system.

Human Effectiveness
Technology Transfer

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-HE-20)